Embeddingly Installed-Type Fastener

Field of the Invention

The present invention relates to a fastener that is installed integrally to an article by means of an embedding section provided on a back surface of a strip-shaped base.

Background of the Invention

In an article like a seat on a vehicle, an office chair, a home chair, or a mattress, etc. there are used a core member having a cushion core member made of a molded product like a foamed resin material, and a flexible covering member made of cloth or leather for covering the surface of the core member. In such an article, it has been known that an inter-engagement type fastener (what is called a plane fastener) having a plurality of engaging elements disposed on one plane of a base, that is, on a major surface, is used for fixing the covering member to the core member. Particularly, users expect a high level of comfort from the articles like seats and chairs. In order to meet such user's needs, there has been an increasing trend that a flexible strip-shaped fastener that can be disposed in a slender groove recessed on the surface of the core member along the seam of the covering member is used as fixing means for fixing the covering member to the core member(as disclosed, for example, in Japanese Unexamined Patent Publication (Kokai) No. 11-127915). In such a form of application, the strip-shaped fastener fixes the covering member to the core member with the engaging elements being detachably engaged with its counterpart, that is, engaging elements such as fiber loops provided on the covering member.

In order to fixedly install the strip-shaped fastener at a desired position of the surface of the core member with the engaging elements exposed, an insert-molding method can be applied advantageously. This is a method in which the fastener is disposed within a mold of the core member as the molded body and is fixed to the core member simultaneously with molding of the core member. According to this insert-molding method, an elongated rail-shaped guide for holding the fastener in a predetermined posture is provided within the mold of the molded body. The guide usually has an elongated groove capable of accommodating the base of the fastener and the engaging elements. The fastener is installed on the guide by inserting the engaging

elements and the base into the groove in a state that a back surface (the surface opposite to a major surface) of the base is exposed.

An embedding section which is to be fixedly embedded into the molded body by means of the insert-molding process, is provided on the back surface of the base of the fastener. Thus, the fastener is integrally installed to the molded body using the embedding section. Conventionally, the embedding section has been composed so as to comprise a plurality of posts erected upright to the back surface of the base and thin plate-shaped anchors formed at the end of each post and extending generally parallel to the back surface. Each anchor has an elliptical profile of koban-like shape that does not project out in the width direction on the back surface of the base. The molded body is formed adjacent to the back surface of the base so as to surround the plurality of posts and anchors. Each anchor is thus bound as if it bites into the molded body, whereby the fastener is securely fixed to the molded body.

Summary of the Invention

In the conventional strip-shaped fastener as described above, it is necessary not only to ensure that the engaging elements exhibit desired level of adhering force for adhering to the counterpart engaging elements, but also to ensure that sufficient strength be obtained in the installation of the fastener to the article (or the molded body) via the embedding section. Especially, when the manner in which the fastener is used in the above-described seats or chairs as fixing means for fixing the covering member to the core member is taken into account, it is required that the strength of the installation exhibited by the embedding section should be larger than the adhering force exhibited by the engaging elements, in order to prevent the destruction of the interconnection between the fastener and the core member, when, for example, tension is intermittently applied to the covering member by frequent and rapid movement of the center of gravity of the seated person, or when the covering member is intentionally separated from the core member for the purpose of replacement or the like. From this view-point, it is required in the conventional strip-shaped fastener to improve the installation strength for installing it to an article via the embedding section as much as possible without impairing the inherent flexibility of such a construction.

One object of the present invention can be to provide a fastener which is integrally installed to an article by means of an embedding section provided on a back surface of a strip-shaped base, and which is capable of improving the strength of installation to the article by means of the embedding section as much as possible without impairing the inherent flexibility of such a construction.

In one aspect of the present invention, a fastener is provided that comprises a strip-shaped base having a major surface and a back surface opposite to the major surface, an engaging section provided on the major surface of the base, and an embedding section provided on the back surface of the base, being adapted to be integrally installed to an article via the embedding section, characterized in that the embedding section comprises a plurality of projecting elements which are discretely arranged spaced apart from each other in the longitudinal direction of the base, and each of which extends outward from the base substantially in the width direction of the base.

The projecting elements can be formed integrally with the base. The projecting elements can be provided detachably on the base. The plurality of projecting elements can be arranged at regular intervals in the longitudinal direction of the base, and the projecting elements project symmetrically on both lateral sides of the base. Each of the projecting elements can have generally flat outer surface extending in parallel to the back surface of the base on the side away from the back surface of the base.

Brief Description of the Drawings

Fig. 1. An enlarged perspective view showing a portion of a fastener according to a first embodiment of the present embodiment.

Fig. 2. A plan view showing a portion of the fastener of Fig. 1.

Fig. 3. A bottom plan view showing a portion of the fastener of Fig. 1.

Fig. 4. A schematic perspective view showing a guide for installing the fastener of Fig. 1 together with the fastener.

Fig. 5. A view showing an article equipped with the fastener of Fig. 1.

Fig. 6. A cross-sectional view showing the fastener installing portion of the article of Fig. 5 when the fastener is inoperative.

Fig. 7. A cross-sectional view showing the fastener installing portion of the article of Fig. 5 when the fastener is operative.

Fig. 8. (a) a plan view, and (b) a side view, of a good example of the projecting elements of the fastener of Fig. 1.

Fig. 9. (a) a plan view, and (b) a side view, of a modification of the projecting elements of the fastener of Fig. 1.

Fig. 10. (a) a plan view, and (b) a side view, of another modification of the projecting elements of the fastener of Fig. 1.

Fig. 11. (a) a plan view, and (b) a side view, of still another modification of the projecting elements of the fastener of Fig. 1.

Fig. 12. An enlarged, partially cut-out plan view showing a portion of a fastener according to a second embodiment of the present invention.

Fig. 13. (a) a plan view, and (b) a front view, of an anchor member having projecting elements of the fastener of Fig. 12.

Fig. 14. (a) a plan view, and (b) a front view, of a modification of the anchor member having projecting elements of the fastener of Fig. 12.

Detailed Description of the Invention

Embodiments of the present invention will be described in detail below with reference to the attached drawings. In the drawings, identical or similar constituent elements will be denoted by common reference symbols.

Figs. 1 to 4 are views showing a fastener 10 according to a first embodiment of the present invention. The fastener 10 is an inter-engagement type fastener having flexibility in multiple directions, and is comprised of a strip-shaped base 16 having a major surface 12 and a back surface 14 opposite to the major surface 12, an engaging section 18 provided on the major surface 12 of the base 16, and an embedding section 20 provided on the back surface 14 of the base 16.

The base 16 is constructed of a plurality of box-shaped parts 22 arranged in spaced-apart relationship with each other in the longitudinal direction, and a plurality of connecting parts 24 for mutually connecting the box-shaped parts 22 into one unit. Each of the box-shaped parts 22 has a substantially hollow structure consisting of a plane upper plate 26 and a plane lower plate 28 extending approximately in parallel, a pair of side plates 30 for connecting between the upper and lower plates 26 and 28, and a partition plate 32 extending in the longitudinal direction between the plates 26, 28,

and 30. The major surface 12 of the base 16 is constructed of the upper plates 26 of the plurality of the box-shaped parts 22, and the back surface 14 of the base 16 is constructed of the lower plates 28 of the plurality of the box-shaped parts 22 in cooperation with the plurality of the connecting parts 24.

The engaging section 18 comprises a plurality of engaging elements 34 erected at regular spacing on the major surface 12 of the base 16. Those engaging elements 34 are provided on each upper plate 26 of the plurality of box-shaped parts 22 forming the base 16, in the same number (seven in the Figures) and in the same layout. Each engaging element 34 comprises a leg 36 stretching generally upright from the upper plate 26 of each box-shaped part 22, and a plurality of (four in the Figures) engaging pieces 38 projecting sideways near the front end of the leg 36. The fastener 10 is detachably fixed to other article by having the plurality of engaging elements 34 of the engaging section 18 frictionally engaged by means of the respective engaging pieces 38 with corresponding engaging section provided on the other article. The engaging elements 34 may be omitted on desired box-shaped parts 22 (at both ends in the longitudinal direction in the Figures).

The lower plate 28 of each box-shaped part 22 has a slit 40 formed so as to extend in a crossing direction at approximately the center in the longitudinal direction of the box-shaped part 22. Further, the lower plate 28 has one rib 42 extending in the longitudinal direction crossing the slit 40 provided to project on the back surface 14 along the whole length of the base 16. The rib 42 has two posts 44 for each box-shaped part 22 extending in the shape of thin plate along the rib 42, provided perpendicularly to the back surface 14. An anchor 46 in the shape of a thin plate extending generally in parallel with the back surface 14 is formed on the front end of each post 44. Each anchor 46 has a profile of koban-like shape which does not bulge out in the width direction on the back surface 14 of the base 16. These plurality of posts 44 and anchors 46 serve as an embedding section 20 for fixedly installing the fastener 10 to a desired article.

In the fastener 10 having above-described construction, owing to the stress dispersion effect at each box-shaped part 22 having the hollow structure, the base 16 can be bent as a whole relatively easily in a horizontal direction, that is, in a direction generally parallel to the major surface 12 and the back surface 14. Further, owing to the

hinge effect of each thin connecting part 24, the base 16 can be bent relatively easily also in a vertical direction, that is, in a direction generally orthogonal to the major surface 12 and the back surface 14. Since the fastener 10 has the base 16 that can be easily bent both in horizontal and in vertical directions, it is possible to install the base 16 on any desired surface portion of an article having a variety of three-dimensional surface by accurately following the surface three-dimensionally. Preferably, the fastener 10 is integrally formed with a resin material like nylon, polypropylene, etc.

As a specific feature of the construction of the fastener 10 according to the present invention, the embedding section 20 further comprises a plurality of projecting elements 48 arranged discretely so as to be spaced apart from each other in the longitudinal direction of the base 16. In the embodiment shown in the Figures, each of the projecting elements 48 has a bar-shaped form and is integrally connected at one longitudinal end thereof to a periphery of the anchor 46 provided on the back surface 14 of the base 16, so as to extend generally in parallel with the back surface 14 substantially in the width direction of the base 16. Each projecting element 48 has, at the free end area thereof, a dimension projecting over a specified length laterally from the base 16.

In the embodiment as shown in Figs. 1 to 3, the plurality of projecting elements 48 are formed with two elements being connected to each of the plurality of anchors 46 provided at generally equal spacing in the longitudinal direction on the back surface 14 of the base 16 so as to project from both side edges of the anchor 46 laterally on both sides of the base 16. As a result, these projecting elements 48 are arranged at equal spacing in the longitudinal direction of the base 16, and symmetrically with each other on both sides of the base 16. With this construction, when the fastener 10 is installed to an article by means of the embedding section 20 as described later, the plurality of projecting elements 48 exhibit an installation strength uniformly in equilibrium over the entire length of the fastener 10.

Alternatively, as shown in Fig. 4, the projecting elements may be provided only on desired anchors 46 among the plurality of anchors 46 provided on the back surface 14 of the base 16. In such a case, the installation strength of the base 16 to an article exhibited by the embedding section 20 can be locally increased at the position corresponding to the anchors 46 at which the projecting elements 48 are formed. Only one projecting element 48 may be formed for each anchor 46, provided that the

equilibrium of the installation strength in the width direction of the base 16 is not significantly impaired.

The fastener 10 is, by means of an insert-molding process using a guide 50 as shown in Fig. 4 to be described later, integrally installed to a molded body of desired shape.

The guide 50 is a rail-shaped block unit for supporting the fastener 10 over a desired length, and is comprised of a bottom wall 52, and a pair of side walls 54 integrally erected from the bottom wall 52 along both edges of the bottom wall 52 extending in the longitudinal direction. The bottom wall 52 and the pair of side walls 54 form one stream of a groove 56 capable of accommodating the base 16 of the fastener 10 and the plurality of engaging elements 34 along the whole length of the guide 50. Both side walls 54 have inner surfaces 54a respectively facing each other with a uniform spacing therebetween over the entire length of the guide 50. The bottom wall 52 has a pair of sealing surfaces 52a orthogonal to the inner surfaces 54a of both side walls 54 at both ends in the longitudinal direction of the guide 50, and a pair of auxiliary supporting surfaces 52b extensively provided in the longitudinal direction of the guide 50 adjacent to the inner surface 54a of each side wall 54. The groove 56 is divided into two parts in function; a first part 56a capable of accommodating the base 16 of the fastener 10 between the inner surfaces 54a of both side walls 54 above the sealing surface 52a and the auxiliary supporting surface 52b; and a second part 56b capable of accommodating the plurality of engaging elements 34 of the fastener 10 below the sealing surface 52a and the auxiliary supporting surface 52b.

The spacing between the inner surfaces 54a of both side walls 54 is made to have a size approximately identical to the size of the base 16 of the fastener 10 in the width direction as an object to be supported. Therefore, when the fastener 10 is properly accommodated into the groove 56 of the guide 50, the inner surfaces 54a of the side walls 54 are brought into close contact with the side edges extending in the longitudinal direction of the base 16 of the fastener 10 accommodated in the first part 56a of the groove 56. The pair of sealing surfaces 52a of the bottom wall 52 are brought into close contact with major surface 12 of the box-shaped part 22 (having no engaging elements 34) on both ends in the longitudinal direction of the fastener 10.

In this way, the guide 50 can hold the fastener 10 in a predetermined posture with frictional force in a state that the base 16 of the fastener 10 is embedded into the first part 56a of the groove 56 while the engaging elements 34 of the engaging section 18 of the fastener 10 are accommodated in the second part 56b of the groove 56. As a result, it is possible to prevent liquid material from penetrating into the second part 56b of the groove 56 when forming the molded body in a state that the fastener 10 is supported by the guide 50. In a state that the fastener 10 is properly held in the guide 50, the plurality of projecting elements 48 of the engaging section 20 project at the free end region thereof outwards from both side walls 54 of the guide 50. The guide 50 can be integrally manufactured by cutting from a metal bar-shaped material like aluminum, aluminum alloy, iron, etc.

Fig. 5 exemplifies an article 60 having the fastener 10 integrally installed on a molded body 58 by the insert-molding process using the guide 50. In the example shown in the drawing, the article 60 is a seat for a vehicle, and the molded body 58 constitutes a core member made of a foamed resin material like polyurethane. In this construction, a plurality of fastener 10 function as fixing means for fixing a covering member 62 made of cloth or leather to the molded body 58. Each fastener 10 is fixedly disposed in a slender recess 64 provided on the surface of the molded body 58 at a desired position along a seam 62a of the covering member 62.

In the insert-molding process, the guides 50 in a number corresponding to the number of fasteners 10 to be installed to the article 60 are disposed within a mold (not shown) of the molded body 58, in a layout corresponding to the layout of the fasteners 10 on the surface of the molded body 58. Each guide 50 is fixed on the formed surface of the mold by fixing means like putty, bolts, magnets or the like, with the groove 56 (Fig. 4) facing to the hollow part of the mold. Each fastener 10 is installed on the corresponding guide 50, with the plurality of engaging elements 34 of the engaging section 18 inserted into the second part 56b of the groove 56 of the guide 50, and with the plurality of box-shaped parts 22 of the base 16 fit into the first part 56a of the groove 56 of the guide 50. Thus, the back surface 14 of the base 16 of each fastener 10, and the rib 42 and the embedding section 20 (the plurality of posts 44, anchors 46 and projecting elements 48) projectingly provided on the back surface 14, are disposed in an exposed state in the hollow part of the mold.

In this state, a liquid foam resin material of the molded body 58 is supplied to the hollow part of the mold. As described before, the base 16 of the fastener 10 is brought into close contact with the pair of inner surfaces 54a, the sealing surface 52a and the auxiliary supporting surface 52b of the guide 50, thereby to prevent the liquid resin material from penetrating into the second part 56b of the groove 56 of the guide 50. Thereafter, when the liquid resin material is foamed and solidified to form the molded body 58, each recess 64 is formed on the surface of the molded body 58 at a position corresponding to the space occupied by each guide 50 within the hollow part of the mold.

As shown in an enlarged view in Fig. 6, in each recess 64, the fastener 10 is fixed to the molded body 58 with the base 16 (except the major surface 12) and the embedding section (the plurality of posts 44, anchors 46 and projecting elements 48) embedded in the molded body 58, and thereby with the plurality of engaging elements 34 of the engaging section 18 exposed in the inner space of each recess 64. In this state, each fastener 10 has its plurality of engaging elements 34 exposed in each recess so that these engaging elements 34 may be detachably engaged with corresponding engaging elements 66 such as fiber loops formed on the back surface of the seam 62a of the covering member 62, thereby fixing the covering member 62 to the surface of the molded body 58 (see Fig. 7).

After the insert-molding process as described above, the molded body 58 is formed in such a shape that it substantially surrounds the plurality of posts 44, anchor 46 and projecting elements 48 which together constitute the embedding section 20 of the fastener 10. At this point, the plurality of projecting elements 48 projecting sideways on both sides of the base 16 of the fastener 10 are in a state that they bite into the molded part further outside of the recess 64 of the molded body 58 (see Figs. 6 and 7). As a result, compared to a conventional fastener that only has the koban-shaped anchors which do not project out of the base as an embedding section, the fastener 10 according to the present invention is fixed to the molded body 58 under sufficiently larger installation strength. Therefore, by means of the fastener 10 according to the invention, destruction of the interconnecting portion between the fastener 10 and the molded body 58 (the portion of molded material surrounding the embedding section 20) can be reliably prevented when the fastener 10 is used, for example, in a seat for a vehicle as described above, under a tension unintentionally exerted to the covering member 62 due to frequent

and rapid movement of the center of gravity of a seated person, or under a tension intentionally exerted for the purpose of replacement or the like, thereby permitting the covering member 62 to be detached accurately and stably from the fastener 10. Also, when the molded body 58 is removed from the mold after the insert-molding process is completed, the fastener 10 is smoothly detached from the guide 50, which advantageously facilitates the removing operation of the molded body 58.

In the fastener 10, the plurality of projecting elements 48 are discretely disposed by being spaced apart from each other in the longitudinal direction of the base 16 so that presence of the projecting elements 48 does not impair the three-dimensional flexibility of the base 16 as described before. Since individual projecting element 48 enlarges the size in the width direction of the embedding section 20 disposed on the back surface 14 of the base 16, even when the fastener 10 is applied to a case where presence of the fastener 10 can be recognized by the feeling of touch by a user as in the above-described application to a seat for a vehicle, installation strength of the fastener can be increased as much as possible by means of the embedding section 20 without impairing the feeling of touch. Further, since the plurality of projecting elements 48 can be formed integrally with the base 16, for example, by an injection molding process, increase of the number of parts can be avoided.

The projecting element provided on the embedding section of the fastener according to the present invention may be formed in various forms, provided that the required installation strength as described above can be ensured. In particular, the construction as shown in Fig. 8 in which projecting elements 48 in the shape of round bar (circular or elliptic cylinder) are connected to an anchor 44 having a koban-shaped profile, and in which the anchor itself has a generally flat outer surface 44a extending in parallel to the back surface 14 on the side away from the back surface 14 of the base 16, has following advantageous effect in the mounting of the fastener on the above-described guide 50. That is, when an operator mounts the fastener 10 manually on the above-described guide 50, the fastener 10 can be smoothly slid on the surface 44a of the plurality of anchors 44 arranged adjoiningly in the longitudinal direction of the fastener 10 with a finger or jig abutted to it. By such a smooth sliding operation, the base 16 of the fastener 10 can be pushed into the groove 56 of the guide 50 quickly and progressively.

As shown in Fig. 9, the koban-shaped anchor 44 may be omitted, and the whole anchoring function may be composed of a bar-shaped projecting element 68. Or, as shown in Fig. 10, a projecting element 70 of a generally rectangular shape may be adopted. Or, as shown in Fig. 11, a plate-like projecting element 72 of a generally diamond shape may be adopted.

In the above-described embodiment, the size relation between the base 16 and the projecting element 48 for ensuring the required installation strength can be chosen as follows. For example, the size relation between the base 16 and the projecting element 48 in the longitudinal direction of the fastener 10 is such that, when expressed with the longitudinal dimension A of a box-shaped part 22 of the base 16 and the width B of an individual projecting element 48 (Fig. 2), B/A is preferably within the range $0.1 \leqq B/A \leqq 0.4$. Also, the size relation between the base 16 and the projecting element 48 in the width direction of the fastener 10 is preferably such that, when expressed with the width dimension C and the distance D between both ends of a pair of projecting elements 48 (Fig. 3), D/C is chosen to be within the range $1 \leqq D/C \leqq 6$.

In the above-described construction, the plurality of projecting elements of the fastener according to the present invention are formed integrally with the base. However, the present invention is not limited to the above construction, and the projecting elements may be detachably provided on the base. Fig. 12 is a view showing a fastener 78 according to a second embodiment of the present invention which comprises an anchor member 76 having such projecting elements 74. Since the fastener 78 has substantially the same construction as the above-described fastener 10 except for the construction of the projecting element 74, corresponding constituent elements are denoted by common reference symbols, and explanation thereof is omitted.

As shown in Fig. 13, the anchor member 76 is comprised integrally of a pair of plate-shaped projecting elements 74 having a profile of generally equilateral triangle, a square-bar shaped beam 80 interconnecting the two projecting elements in a symmetric layout with the vertices facing opposite to each other, and a plate-shaped mounting portion 82 formed between the two projecting elements 74 approximately at the longitudinal center of the beam 80. Two sets of anchoring elements 84, 86 projecting sideways on both sides of the beam 80 are formed on the mounting portion 82. One set of anchoring elements 84, 86 are composed of a small-sized anchoring element 84 having

a profile of generally right-angled triangle and a large-sized anchoring element 86 having a profile of generally rectangular shape. The two anchoring elements 84, 86 are disposed such that an oblique side of the small-sized anchoring element 84 is situated away from the large-sized anchoring element 86, and that a gap slightly larger than the thickness of the post 44 provided on the back surface 14 of the base 16 of the fastener 78, is formed between the two anchoring elements 84 and 86. The two sets of anchoring elements 84, 86 are disposed symmetrically to each other with respect to the beam 80 as a centerline.

The anchor member 76 is detachably mounted to the back surface 14 of the fastener 78 in a relative positioning with the beam 80 facing in a direction approximately orthogonal to the rib 42 provided on the base back surface 14 of the fastener 78. Thus, the beam 80 of the anchor member 76 is inserted between a pair of adjoining koban-shaped anchors 46 provided on the base back surface 14 of the fastener 78, and the mounting portion 82 formed at approximately the longitudinal center of the beam 80 is anchored to a pair of posts 44 supporting the anchors 46 (Fig. 12). Here, with the oblique side of the pair of small-sized anchoring elements 84 abutted first to the two posts 44, the mounting portion 82 is inserted between the posts 44 under a pressing force. Thereby, with accompanying elastic deformation of the two posts 44, corresponding post 42 is fit in a snap style into the gap between the anchoring elements 84, 86 of the respective set. When the anchor member 76 is properly mounted to the base back surface 14 of the fastener 78, a pair of projecting elements 74 are disposed as a whole so as to project on both sides in the width direction of the base 16.

The fastener 78 having the above-described construction is, by means of the insert molding process as described before, integrally installed to the molded body 58 (Fig. 6). In this state, the plurality of posts 44 and anchors 46 of the fastener 78 are embedded into the molded body 58, and the anchor members 76 mounted on the adjoining pair of posts 44, especially two projecting elements 74, bite deeply into the molded body 58, in the same manner as the projecting elements 48 shown in Fig. 6. As a result, compared to a conventional fastener that only has the koban-shaped anchors which do not project out of the base as an embedding section, the fastener 78 is fixed to the molded body 58 under sufficiently larger installation strength. It will be appreciated that, in this manner, the same operative effect can be obtained with the fastener 78 as with the above-described fastener 10.

Further, the fastener 78 has the advantage in that it permits desired number of anchor members 76 to be selectively mounted at desired positions in the longitudinal direction, on the fastener base having conventional construction. With this construction, even if the required fastener installation strength varies depending on the installation position, when installing the fastener to the molded body of an article to which the fastener is applied, the optimal fastener installation strength can be easily achieved.

The projecting elements of the anchor member mounted on the embedding section of the fastener according to the present invention may take various forms provided that the required installation strength as described above can be ensured. For example, as shown in Fig. 14, an anchor member 94 comprising integrally a plate-shaped projecting element 88 having a generally rectangular profile, a square-bar shaped beam 90 extending over the entire length in the longitudinal direction of the projecting element 88, or a mounting portion 92 formed approximately at the longitudinal center of the projecting element 88, may be adopted. Two sets of anchoring elements 84, 86 projecting laterally on both sides of the projecting element 88, are formed on the mounting portion of the anchor member 94, and in the same manner as in the anchor member 76, these anchoring elements 84, 86 are anchored to a pair of posts 44 of the fastener 78. When the anchor member 94 is properly mounted on the base back surface 14 of the fastener 78, the projecting elements 88 are disposed so as to project laterally on both sides in the width direction of the base 16.

Example

In order to determine the improvement effect on the installation strength of the fastener according to the present invention, a separation test was performed on the fastener 10 shown in Fig. 1, as installed to the molded body. Specifically, a fastener 10 was prepared with total length of the base 16 of 250 mm, total width of the base 16 of 8.5 mm, and distance D between both ends of a pair of projecting elements 48 (Fig. 3) of 30 mm, and by means of an insert-molding process, was installed to the molded body 58 (or a sitting part of a vehicle seat) shown in Fig. 5 (see Fig. 6). In this state, a stretching force was applied at one longitudinal end of the base 16 of the fastener 10, in a direction perpendicular to the bottom surface of the recess 64 of the molded body 58, and the force at the moment when the embedding section 20 was separated from the molded body 58

was measured as the installation strength. The measured installation strength was about 40 N.

As a comparative example, same separation test was performed on a conventional fastener having koban-shaped anchors which do not project out of the base. The conventional fastener had identical construction as the above-mentioned tested fastener 10, except that the projecting elements 48 were not provided. The installation strength measured with the conventional fastener was about 20 N.

As is evident from the foregoing explanation, in accordance with the present invention, with the fastener integrally installed to an article by means of an embedding section provided on the back surface of the strip-shaped base, the installation strength for installing to an article by means of the embedding section can be improved as much as possible without impairing the flexibility inherent in the fastener.